

CLAIMS

What is claimed is:

1. A method of detecting the tire pressure loss in a vehicle, comprising:
 - detecting angular speed variations of one or more wheels of the vehicle over a specified number of wheel revolutions;
 - analyzing the frequency of the angular speed variations;
 - eliminating pole pitch errors in a single angular spectrum;
 - mapping a peak frequency from angular domain to time domain;
 - determining if the frequency changes over the time domain;
 - relating frequency changes to pressure loss in the tire; and
 - indicating the pressure loss to the driver of the vehicle.
2. The method of claim 1 wherein the determining includes determining if the frequency shifts from a higher frequency to a lower frequency at a given vehicle speed.
3. The method of claim 1 wherein the detecting includes detecting the vibration with an ABS encoder.

4. The method of claim 1 further comprising averaging a series of continuous single frequency spectra.
5. The method of claim 4 further comprising curve fitting the averaged frequency spectrum in the angular domain.
6. The method of claim 5 further comprising calculating the peak frequency from the averaged frequency spectrum.
7. The method of claim 6 further comprising making long-term adjustments by filtering a series of peak frequencies.
8. The method of claim 1 wherein the determining includes detecting shifts in the peak frequency.
9. The method of claim 8 wherein the indicating includes presenting tire pressure loss information on a display viewed by the driver of the vehicle.
10. The method of claim 1 further comprising employing Fast Fourier Transforms for transforming a discrete sampled angular domain to an angular frequency domain.
11. The method of claim 10 further comprising employing Discrete Fast Fourier Transforms.

12. The method of claim 1 wherein the detecting includes detecting the angular speed variations of four wheels.

13. The method of claim 12 wherein the indicating includes indicating pressure loss in one or more tires of four tires mounted on the respective wheels.

14. The method of claim 1 wherein the detecting occurs at vehicle speeds of at least 40 kph.